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ABSTRACT

To investigate the relationship between the intellectual maturity of college students and evidence of rhetorical maturity in their writing, 70 student essays were evaluated on three independent measures: W. G. Perry's scale of intellectual development, P. G. Diederich's scale of writing competence, and a measure of audience awareness based on the writer's constructed context. The study addressed the question of why some students write better than others. General language abilities (e.g., vocabulary, gyntactic maturity) cannot account for all the differences between good and poor writing. By focusing on college students who presumably have the necessary preliminary tools to write (spelling, vocabulary, syntactic options), the study sought to examine the differences in the students' rhetorical maturity with respect to writing competence and context. It was hypothesized that students who had moved through the more complex positions on Perry's model of intellectual development would have internalized the need to provide necessary and appropriate context in their writing. The subjects represented both traditional and older undergraduate and graduate students across a broad spectrum of majors. The results suggested that aspects of intellectual development described by Perry's theory (critical thinking, questioning assumptions, drawing conclusions) were significantly related to the quality of student writing. Results also indicated that levels of cognitive development among college students had a statistically significant relationship to both writing competence and constructed context. (Author/HOD)

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RHETORICAL MATURITY AND PERRY'S SCHEME OF COGNITIVE COMPLEXITY

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Abstract

This study investigated the relationship between the intellectual maturity of college students and evidence of rhetorical maturity in their writing. Seventy student essays were evaluated on three independent measures: Perry's scale of intellectual development, Diederich's scale of writing competence, and a measure of audience awareness based on the writer's constructed context.

This study addressed the question of why some students write better than others. General language abilities (e.g., vocabulary, syntatic maturity) cannot account for all the differences between good and poor writing. By focusing on college students who presumably have the necessary preliminary tools to write (spelling, vocabulary, syntactic options), we can examine the differences in their rhetorical maturity with respect to writing competence and context.

The results of this study suggest that aspects of intellectual development described by Perry's theory (critical thinking, questioning assumptions, drawing conclusions) are significantly related to the quality of student writing.

The results indicate that levels of cognitive development among college sutdents have a statistically significant relationship to both writing competence and constructed context.

The purpose of this study was to clarify some elements of the relationship between the intellectual maturity of college students and their writing ability in general. Recently, there has been a great deal of speculation, but little empirical research, linking cognitive development and writing skill (Bereiter, 1980; Emig, 1981; Flower & Hayes, 1980; Shuy, 1981). The empirical research that exists focuses primarily on elementary and secondary school children, rather than college undergraduates (Grundlach, 1982; Kroll, 1978; Rubin, 1978; Scardamalia, 1981; Scardamalia, Bereiter, & Goelman, 1982). As researchers and teachers, we should not take for granted the notion that college students who are maturing intellectually, that is, recognizing and coming to terms with the complexity of reality, are by definition, automatically improving their ability to communicate those new ideas and understandings in writing.

Williams (1983) suggested that there are actually two problems facing writers: the problem <u>of</u> discourse, and the problem <u>in</u> discourse; traditionally rephrased: what to say and how to say it. We cannot assume that even when students have discovered something to say, that they will be able to write it in a way that does justice to their unique perspectives and ideas.

Intellectual development and growth involve a complex reorientation from a relatively simple right/wrong perception of reality to an increasingly cautious appreciation of the contextually relative nature of reality (Perry, 1970). Students engaged in re-seeing the world with new and more subtle insights may indeed have more meaningful things to say. The question

raised in this research is whether their skills at communicating subtlety, uniqueness, and depth of thought keep pace with their growing intellectual complexity.

The major hypothesis of this study was that the ability to communicate in writing does, in fact, parallel students' increasingly refined perceptions of their world. This research attempted to refine the notion of a simple, positive correlation between cognitive maturity and writing skill. The first question addressed was: how do the written texts of college students who are at different levels of intellectual maturity (evaluated on the Perry model) compare with respect to criteria which have been previously established to assess writing abilities? Second, the current study asked: to what extent can contextual elaboration in written texts be explained as a function of cognitive maturity.

This study tested the hypothesis that students who have moved through the more complex positions on Perry's model of intellectual development have internalized the need to provide necessary and appropriate context in their writing. Context in this research is related to audience awareness, and refers to those elements which create for the educated, general reader, a sense of understanding, or identification with the writer.

Review of Related Literature

Intellectual Maturity

Intellectual maturity, as a construct, is drawn from the field of developmental psychology in general, and William Perry's (1970) theoretical Scheme of Intellectual and Ethical Development of college students in particular. While competing theories

might offer different perspectives on cognitive development, Perry presents a nine-stage hierarchy to explain the intellectual growth of college students, the subjects of this study. Growth occurs as students become better able to cope with uncertainty and ambiguity in the world, and better able to incorporate multiple perspectives of reality into their own world views.

Perry's overarching scheme attempts to explain how college students come to terms with their expanding knowledge. In the early positions (1 and 2) students perceive the world in terms of good/bad or right/wrong. This dualistic view of the world matures into multiplicity (Position 3) as the student becomes aware of legitimate diversity of opinion and accepts "temporary" uncertainty, that is, until "the right answer can be found" (Perry, 1970, p. 9). Position 4 students can recognize relativism, but only in Position 5 do students come to fully appreciate that truth only exists in context (contextual relativism). The higher positions on Perry's scale (6, 7, 8, 9) move from a perspective on knowledge to a growing awareness of the need for personal commitment within a contextually relative epistemology.

Although Perry's model has been used primarily in a counseling context (Knefelkamp & Slepitza, 1978; Parker, 1978; Perry, 1970) recent research suggests that it has potential to provide important new insights into the writing process (Gere, 1980; Hays, 1983; Overbeck, 1984). The model incorporates categories of reasoning that become increasingly analytical, synthetic and evaluative as the student matures from a rule dependent, rule following orientation, to a rule independent, rule generating

orientation. Significiantly, these higher order reasoning processes have become the touchstones of the most current research into writing (Bradford, 1983; Flower & Hayes, 1980, 1981; Hays, 1983; Miller, 1980; Young, 1981). Perry is part of a long tradition of cognitive developmentalists who have identified as a crucial transformation, the student's awareness of "otherness" (Flavell, Bodkin, Fry, Wright, & Jarvis, 1968; Piaget, 1959). His characterization of this transformation is particularly appropriate for a study of college student writing. In Perry's model, a "revolution" occurs when the student moves from a dualistic perspective to a contextually relative perspective; that is, when the student comprehends that what exists or is true for him may exist differently, or may not be true for someone else, or under different circumstances. It follows, then, that a student who has matured into the Perry position of contextual relativism would be more likely to take pains with his written text to make it more accessible to a designated reader.

Perry's model of intellectual development (and the corresponding Measure of Intellectual Development used in this study) offers composition researchers a potentially valuable tool for gaining insight into the relationship between intellectual maturity and the effectiveness of college students' written texts.

Rhetorical Maturity

Rhetorical maturity is a term borrowed from Susan Miller (1980) who coined it in an attempt to capture the quality that is missing from the poor papers written by unskilled adult writers. Rhetorical maturity, as it is used in this study, has three

components. The first element, language competence, encompasses the students' repertoires of linguistic, syntactic and lexical options. The second element includes the students' abilities to arrive at and limit a topic, and develop and organize a text. Taken together, these two elements comprise what has traditionally been evaluated in holistic measures of writing competence or writing abilities (Charney, 1984; Diederich, 1974; Odell, 1981).

The third element of rhetorical maturity, as defined in this study, is evidence of sophistication in the writer's awareness of audience. This third component has its roots in what has come to be known as the "new rhetoric" (Steinman, 1967). Unlike the classical rhetoric of Aristotle which originated in the oral tradition, the new rhetoric focuses on the written product, and more recently, on the writing process (Britton, Burgess, Martin, McLeod, & Rosen, 1975; Emig, 1971; Kinneavy, 1971). The writer's awareness of his intended readers, and the extent to which a writer acknowledges, understands or identifies with his audience determines, in large part, the effectiveness of his written communication (Berkencotter, 1981; Crowhurst & Piche, 1979; Kroll, 1978; Rubin, 1978; Scardamalia, 1981).

In this study the term <u>context</u> is used to refer to the quality in student writing which indicates evidence of the writer's ability to accommodate to his readers.

Evaluating student writing has been one of the most troublesome issues plaguing researchers in the field of writing (Cooper, 1981; Hirsch, 1977). When it is not reduced to a sentence level, writing effectiveness has traditionally been evaluated implicitly,

if not explicitly, in terms of the previously identified rhetorical criteria (Charney, 1984; Cooper, 1981; Diederich, 1974). Current and ongoing research in writing continues to use modifications of these criteria in the form of the Diederich Scale (Cooper, 1981; Freedman & Pringle, 1980; NAEP, 1980). Accordingly, this study uses the same model (Diederich, 1974) to evaluate college students' writing samples.

Context independence is originally a sociolinguisitic construct that has been defined in that discipline as a necessary and limiting aspect in the interpretation of oral and written communication (Bernstein, 1971; Malinowski, 1923). Because context determines a large part of the meaning of oral utterances, the lack of a shared situational context imposes significant restraints on written communication. Shaughnessy (1977), and more recently Schafer (1981), suggested that many of the weaknesses commonly found in the essays of unskilled writers can be understood in terms of "oral language interference." Oral language interference occurs when a writer uses language as if he were a speaker, who shared common contexts of situation and culture with his listeners, rather than a writer who must establish context for his readers. In this study, a measure of levels of context is used as an indication of a writer's ability to accommodate to his readers. Context can be seen as a bridge between theoretical concepts from the psychological domain: decentering, awareness of others, empathy; and parallel concept from the fields of rhetoric and composition: audience awareness, coherence, and cohesion.

The purpose of this study, then, was to examine the relationship between students' intellectual maturity and their ability to write effectively. Particular attention was given to the relationship between college students' intellectual maturity, their writing competence, and contextual elaboration within their written texts.

Method

Sample

A sample of 70 essays was drawn from a data bank at the Center for Applications of Developmental Instruction (CADI) at the University of Maryland, College Park. Over a period of nine years the CADI has compiled over 2,000 essays written to the specifications of the Measure of Intellectual Development (MID) from students in over 30 colleges and universities throughout the United States (Moore, 1982). Twenty essays were drawn from Perry positions 2, 3, and 4. Because of the difficulty in obtaining position 5 essays, only 10 were available for this study. The population represented in this sample includes both traditional and nontraditional aged undergraduate and graduate students across a broad spectrum of majors.

Instrumentation

Measure of Intellectual Development (MID). The MID is a copyrighted instrument originally created by Knefelkamp (1974) and Widick (1975) to assess intellectual growth according to Perry's model of intellectual and ethical development. It has been refined and improved through numerous research efforts and is consequently "the most widely used and best researched assessment instrument for the intellectual dimension of William Perry's theory" (Moore, 1983, p. 1).

The MID asks several open-ended questions which require written responses in the form of essays. The essays used in this study were restricted to either the "best class" essay or the substantively similar "ideal learning environment" essay. The essays, which were administered in class, were the subject of analysis for both writing competence and context independence.

The MID essays were scored at the CADI by a professionally trained team of scorers. Each essay was scored independently by two readers. In dominant position agreement, reliability, reported by Moore (1982) ranges from .74 to 1.00, averaging .84. The rating system includes stable positions (222, 333, 444, 555, etc.) and two transitional positions between the stable position (i.e., 222, 223, 233, 333).

Diederich Scale. Diederich originally created an analytic scale for evaluating the quality of written composition in 1961 for the Educational Testing Service by doing a factor analysis of reasons teachers and other knowledgeable experts gave for their evaluation of students' compositions. The scale is characterized as an analytic scale because it differentiates eight aspects of the composition: ideas, organization, wording, flavor, usage, punctuation, spelling, and handwriting. Each aspect is rated on a five-point scale with ideas and organization receiving double weight, resulting in a total score of 50 possible points.

All 70 essays were scored by a primary rater. A subsample of 20 (five at each of four cognitive levels) was rated for reliability by a secondary rater. All essays were coded to insure unbiased scoring.

The reliability for the Diederich scale was determined by using the intraclass correlation formula described by Ebel (1951). The correlation between the primary and secondary rater was .77, well above the .50 described by Diederich (1974) as typical.

According to Fagan, Cooper, and Jensen (1975), the Diederich scale has "high content validity since it is used with whole pieces of written discourse" (p. 190). Since this study is concerned with writing at the discourse level rather than the sentence level, the Diederich scale can be considered an appropriate measure of the traditional understnding of writing competence.

Levels of Context Scale. The Levels of Context measure used in this study is based on a measure which was originally developed by the faculty and staff of Alverno College in Milwaukee, Wisconsin, over a period of several years. The Alverno Scale has been used primarily as a diagnostic teaching tool for writing instructors across the curriculum of Alverno College, in conjunction with other measures, to increase students' awareness of the writer/audience context, moving from little elaboration (Level 1) to a fully clarified, conceptualized and communicated text within a particular discipline (Level 4) (Alverno College, 1983).

For the purposes of this study, the original Alverno context instrument was modified to make the scale easier to apply in this research (see Figure 1). First, the number of levels was reduced from four to three. Level 4, according to the original scale reads: "Clarifies preceding in relationship to framework from disciplines." Because the essays considered in this study were specifically designed to be as discipline free as possible, level

Figure 1

CONTEXT MEASURE CRITERIA AND EXAMPLES

Score	Level	Criteria/Characteristics	Example w/comments
0	No context	Absence of any clues which would help a reader make sense of the intended message. Possible characteristics may include the following: Sentence fragments, ambiguous or non-standard abbreviations, lists without any apparent organizing principle.	Geo. 3 -- friendly teacher, easy grader, class discussion.
+1	Level 1	Clarifies in the beginning basic elements of framework and purpose (what am I telling whom, under what condition and why?) Does not continue to develop or build on initial framework; possible confusing references or organization.	English 393 has been the most valuable course for me. The most important one is because it is all original. Every assignment in this course is very practical. I thought that the subject matter as well as the content of this course was appropriate.
+2	Level 2	Continues to clarify context of thought by distinguishing own observations and experiences from reported or synthesized information. Uses marked cohesive devices as transitions. May lapse into occasional tangential ideas and unclear referrents.	The best class I've taken since I began college was a psychology class at Florida State University. It was positive because of the professor I had. At first when I told people I had Dr. _____, they told me to watch out he was tough, but I found that even though he was hard however I enjoyed the class so much it did not matter.
+3	Level 3	Makes explicit relationships among various sources of ideas (own experience, instructors, research, general knowledge). Fully elaborated text--using specific details to support generalizations; "taking boys" in different directions to allow for alternative positions, clearly marked cohesive relationships within text.	Dr. _____, the course instructor, had a unique approach to presenting course information. While most courses at this campus are taught by the instructor lecturing day after day, the students enrolled in this class do the instructing. [Description followed.]

[Total possible score 6 points]

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four was omitted in the modified scale. Second, because this study was conducted within the field of writing research, linguistic, semantic, and rhetorical characteristics were identified at each level to help guide the raters in determining the level of context of a given essay.

Third, brief, annotated illustrations of each level of context were provided on the scale to further guide the rater. Finally, in order to use the scale for the purposes of statistical analysis, point values were assigned to the three levels: Level 1 = 1, Level 2 = 2, Level 3 = 3.

The essays were scored for context by a different team of raters from those who scored the essays on the Diederich scale. All 70 essays were given a code number and scored by a primary rater. A subsample of 20 essays (five at each of four cognitive levels) was rated for reliability by a second rater.

The reliability of the context scale rating based on Ebel's intraclass correlation (1967) of 20 essays was .92, clearly within the acceptable range. Both raters expressed satisfaction at the relative ease with which they were able to apply the scale once they felt comfortable with it.

Because the context scale is an unpublished instrument, validity was established in two pilot studies. In addition, two respected researchers and experts in the fields of rhetoric and composition evaluated the scale. Jeanne Fahnestock, co-author of A Rhetoric of Argument (1982) and Anne Ruggles Gere, author of "Written Composition: Toward a Theory of Evaluation" (1980), both critiqued the context scale for the purposes of establishing

validity. While both offered suggestions for refining and clarifying the scale, they independently agreed that the measure addresses that aspect of writing defined here as context.

Results

The principle predictions tested in this study included the effect of Perry position on Diederich and context scores. A one-way ANOVA was used to test the research hypothesis. Separate analyses tested each outcome measure across the four main cognitive levels (Perry positions 2, 3, 4, and 5). In addition, post hoc Sheffé tests for multiple comparisons were used to determine significant difference among the four groups.

The results of the ANOVA on the writing competence variable indicated that students' written texts which had been identified on the MID at higher levels of cognitive development scored significantly higher on the Diederich Scale than students' texts which had been characterized at lower levels of cognitive development. (Tables 1 and 2)

Table 1

Mean Scores for Writing Competence at Four Levels of Cognitive Development

Cognitive Levels	N	Mean Score	S.D.
2	20	30.30	5.64
3	20	33.00	6.00
4	20	38.40	4.90
5	10	41.00	4.89

As indicated in Table 2, there were significant differences among the four groups. Sheffé's Multiple Comparison Procedure was used as a follow-up on the ANOVA to determine significant differences between the four positions. (Figure 2)

Table 2

Summary ANOVA Table for Scores of Writing Competence across Four Positions

Source	df	SS	MS	F
Between groups	3	1112.48	370.83	12.47**
Within groups	66	1962.99	29.74	
Total	69	3075.47		

**p .001

Figure 2

Sheffé Comparisons among Means of Writing Competence at Four Levels of Cognitive Development

Means	Cognitive Levels	2	3	4	5
30.30	2				
33.00	3				
38.40	4	*	*		
41.00	5	*	*		

*Denotes pairs of groups significantly different at the .05 level.

The results of the Sheffé test of multiple comparisons (writing competence variable) identified significant differences between levels 2 and 4; 2 and 5; 3 and 4; and 3 and 5. There were no significant differences between positions 2 and 3 or 4 and 5.

Scores of student essays on the context scale were also analyzed using a one-way ANOVA procedure. (Tables 3 and 4)

Table 3

Mean Scores for Context at Four Levels of Cognitive Development

Cognitive Levels	N	Mean Score	SD
2	20	1.25	.72
3	20	2.20	.77
4	20	5.35	1.35
5	10	5.10	1.45

Table 4

Summary ANOVA for Context Scores at Four Levels of Cognitive Development

Source	df	SS	MS	F
Between groups	3	224.47	74.82	66.38**
Within groups	66	74.40	1.12	
Total	69	298.87		

**p .001

The results of the analysis of context in student writing closely parallel the findings with respect to writing competence. A significant difference was found between students at lower and higher levels of cognitive development.

These results indicate that significant differences exist among the four groups with respect to context. It should be noted in Table 3, that the mean score for essays at Position 5 was slightly lower than the mean for Position 4. The Sheffé test of multiple comparisons was applied to these results. The results of the Sheffé test appear in Figure 3.

Figure 3

Sheffé Comparisons among the Means of Context Scores across Four Levels of Cognitive Development

Means	Groups	2	3	4	5
1.25	2				
2.20	3				
5.35	4	*	*		
5.10	5	*	*		

*Denotes pairs of groups (cognitive levels) significantly different at the .05 level.

Again, significant differences appear between cognitive levels 2 and 4, 2 and 5, 3 and 4, and 3 and 5. No significant differences appear between 2 and 3 or 4 and 5 on the Sheffé test.

Discussion

The results of this study indicate that levels of cognitive development among college students do have a significant relationship to their writing competence. While there was evidence of differences among all four Perry positions ($\bar{X}_{Perry\ 2} < \bar{X}_{Perry\ 3} < \bar{X}_{Perry\ 4} < \bar{X}_{Perry\ 5}$), significant differences appeared between the regrouped levels (2 and 3, 4 and 5). This finding is consistent with the definition and description of the different cognitive levels in Perry's Scheme. According to Perry (1970), students at dualistic levels of cognitive development think in a qualitatively different way from students who have matured from that limited egocentric, right/wrong perspective into Multiplicity, and Contextual Relativism which allow for multiple perspective taking.

The question to be raised with respect to these results is why no significant differences appeared between positions 2 and 3 or positions 4 and 5, when, according to Perry's Scheme each of these positions is clearly differentiated.

The lack of significance at the .05 level between 2 and 3, and 4 and 5, in this research, must be considered in context. First, a larger sample size at each position might yield significant results. Second, each of the instruments used has its own limitations. The MID elicits clearer stage responses at the early positions of the Perry model. In position 4, students still respond to the instructions, at least as carefully as they respond to the substance of the questions being asked; but at position 5, students may be more inclined to use the allotted time for

exploring ideas with respect to the question rather than writing a grammatically correct essay. The position 5 essays, as a group, had a tendency to be sketchy outlines, similar to the pre-writing, invention techniques encouraged by writing teachers. Finally, the Diederich Scale and the Context Scale share the limitations of analytical/holistic measures of writing previously discussed. They may not reflect fine distinctions between papers of generally similar quality.

Given these considerations, the evidence suggests that further research might reveal significant differences in writing competence between each position in the Perry scheme.

The results of this study indicate further, that cognitive development has a significant relationship to levels of context in student writing. Context has been associated, in this study, with audience awareness.

Audience awareness represents the communicative component of rhetorical maturity. A student may possess a fine repertoire of lexical, grammatical, syntactic and stylistic competencies, but sensitivity to audience allows that student to make choices between and among the various strategies he has available. The theoretical question addressed by the second research question asks whether students who have matured out of Dualism and into Multiplicity and Contextual Relativism are able to assess their readers' needs more accurately. Theoretically, the movement from an egocentric to a decentered perspective should manifest itself in an awareness of alternative points of view. The evidence presented here supports that hypothesis.

The means for Perry positions 2 and 3 were significantly lower than means for 4 and 5, and the breakdown between 4 and 5 deviated only slightly from the expected pattern. Level 4 essays had a higher mean than level 5 essays on the Context Measure; however, the difference was not statistically significant.

Although there was no significant difference between positions 4 and 5, the direction of the difference ($\bar{X}_{Perry\ 4} > \bar{X}_{Perry\ 5}$) raises considerations for discussion similar to those discussed in the previous section. The first consideration is the difference in sample size and quality. Perry 4 included 20 essays but Perry 5 had only ten, five of which were written as answers to the post-test question which asked for a description of an ideal learning environment, rather than a best class. While the content of the two essays is essentially similar, it can be argued that the post-test essay provided more explicit context than the pre-test essay. Some writers chose to make an annotated list of qualities rather than incorporate them into the essay which was requested. These responses may have been less representative of the quality of the students' writing.

Finally, the context instrument itself was untested except for the pilot studies conducted prior to this research. Improvement and refinement of the context measure would quite possibly affect results of future studies in this area.

While this empirical study establishes a link between the intellectual maturity of college students and rhetorical maturity in their writing, many questions remain unanswered.

One set of questions raised by this research resembles the

classic "chicken and egg" quandry. Do students at higher levels of intellectual maturity write better <u>because</u> they think better, or is it possible that the act of writing itself generates the disequilibrium which leads to cognitive development. The formulation of the problem in those terms presupposes a directional relationship. Murray (1978) described writing as a process of discovering meaning. Britton (1980) poetically conceptualized what happens when writers are authentically engaged in the act of writing as "shaping at the point of utterance" (p. 61). Those of us who write can testify to the truth of each of those insights. If writing is seen not only as a reflection of thinking, but an actual crystallization of nascent ideas, then research which links the two together becomes even more important.

A second set of questions raised by this study focuses on the quality of audience awareness in writing which continues to intrigue researchers. The present study presents evidence that college students at higher levels of cognitive development provide more context in their writing for their readers. A follow up study, investigating how students at different stages of intellectual maturity accommodate to different audiences, would help refine the present findings. Such a study might have students who have previously been identified at various levels of cognitive development write for several different audiences (ranging from intimate to distant). It would be revealing to compare the nature of the context provided by students at different cognitive levels for each audience.

Another approach to the study of audience awareness might involve naturalistic rather than experimental methodology. One of the key questions about the relationship between audience awareness and cognitive development remains unanswered: How do students set about making assumptions about their readers? Perhaps the most direct way to answer that question is to ask them. Case studies and interviews with students who are engaged in writing over the course of a four year college career might uncover insights which have, up to now, been overlooked.

The issues raised here draw on sources from multiple disciplines: writing research, cognitive psychology, rhetoric and linguistics among others. It is only through the continued integration of knowledge that we can make progress in understandig the complex activity of writing. The findings of this study indicate that developmental factors continue to influence student writing through the college years.

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